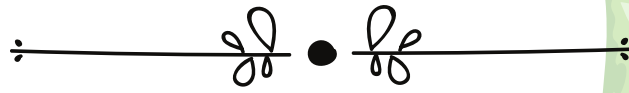


BIOHACK NOTES



MORPHOLOGY OF FLOWERING PLANTS

- BASED ON ACTIVE RECALL AND SPACED REPETITION
- TARGET 360/360 IN NEET BIOLOGY & 100/100 IN BOARDS!



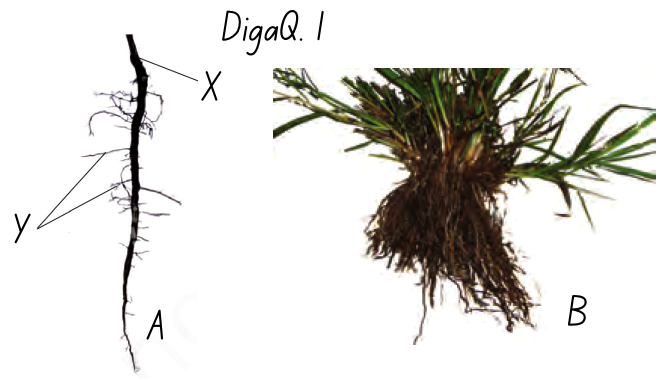
PARTH GOYAL



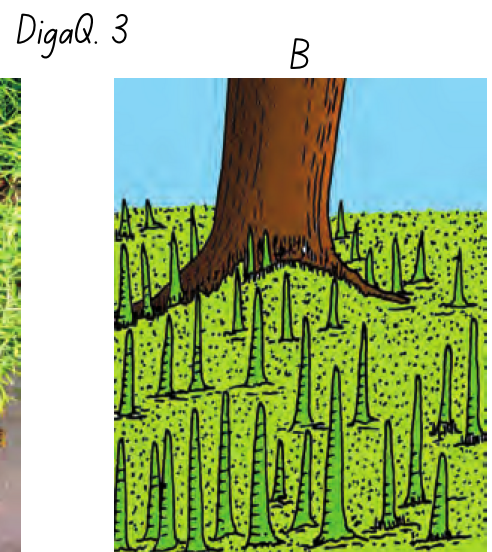
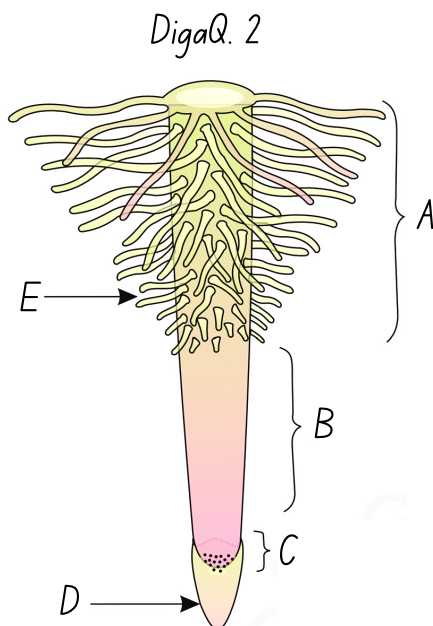


• THE ROOT

1. The direct elongation of radicle leads to the formation of _____ root.
2. Name the 3 root systems.
3. Tap root system ex (1)
4. Primary root is short lived in _____.
5. Fibrous root originate from the _____ (NEET 2019)
6. Ex of fibrous root (1)
7. Adventitious root definition -
8. Adventitious root ex (3) - (NEET 2018)
9. Fxn of roots are (4)
10. Thimble like structure covering root apex is _____
11. Cells of the region of meristematic activity are very big. T/F
12. They have thin walls and dense protoplasm. T/F
13. Zone responsible for the growth of the root in length is -
14. Root hair arise from _____
15. Tap root of _____, _____ and adventitious root of _____ store food.
16. Hanging structures supporting banyan tree -
17. Stilt root example (2)
18. Stilt root arise from stem. T/F
19. In _____, pneumatophores are present which helps to get _____



C





• THE STEM

20. Stem develop from _____
21. Examples of stem modified to store food (5) -
22. They also act as an organ of perennation to tide over unfavorable conditions. T/F

23. Stem tendrils ex (4) (NEET 2016)

24. Stem modified into thorns ex (2) - (NEET 2016)

25. Some plants of arid regions modify their stem to flattened stem ex - _____ or fleshy cylindrical ex - _____ structures called ____ (NEET 2016)

26. What are runners ?

27. Runners ex - (2)

28. What are stolons ?

29. Stolons ex (2)

30. What are offsets ?

31. Offsets ex (2)

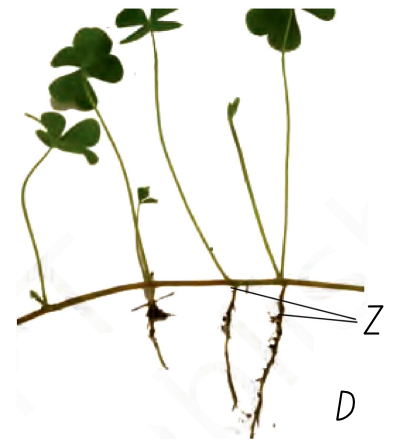
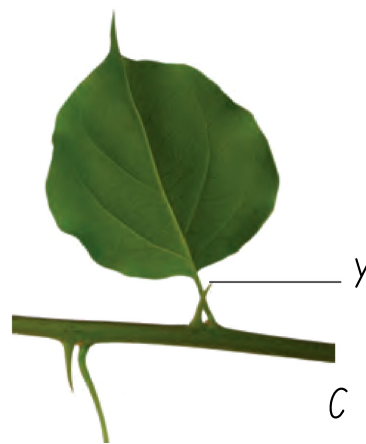
32. What are suckers ?

33. Suckers ex (3)

34. Pitcher plant, venus fly trap are also example modified stem. T/F (NEET 2016)

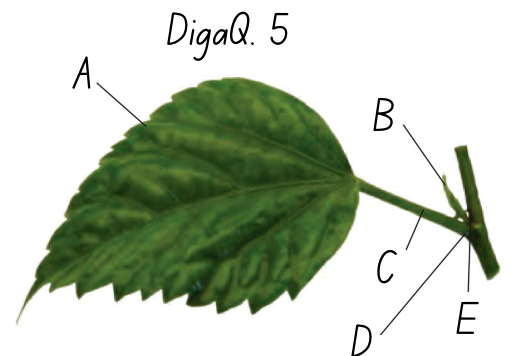


DigaQ. 4



• THE LEAF

35. Leaf develops at a _____ and bears a _____ in its axil.
36. Leaves are arranged in a basipetal manner. T/F
37. Parts of leaf is (3) -
38. _____ bear two small leaf like structures called _____
39. In _____, the leaf base expanded into a sheath covering the stem partially or wholly.
40. In some _____, the leaf base may become swollen, which is called _____
41. _____ help hold the blade to light
42. Lamina is also called _____
43. The lamina is incisioned but don't touch the midrib. The leaf is simple/compound.
44. How to differentiate between simple leaf and compound leaflet ?



DigaQ. 5



PARTH GOYAL

45. Types of compound leaf (2) with one ex of each.

46. Types of phyllotaxy (3)

47. Alternate ex - (3)

48. Opposite ex - (2)

49. Whorled ex - (2)

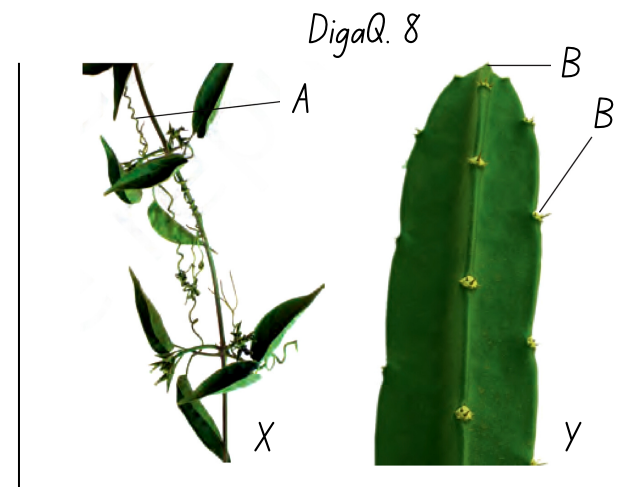
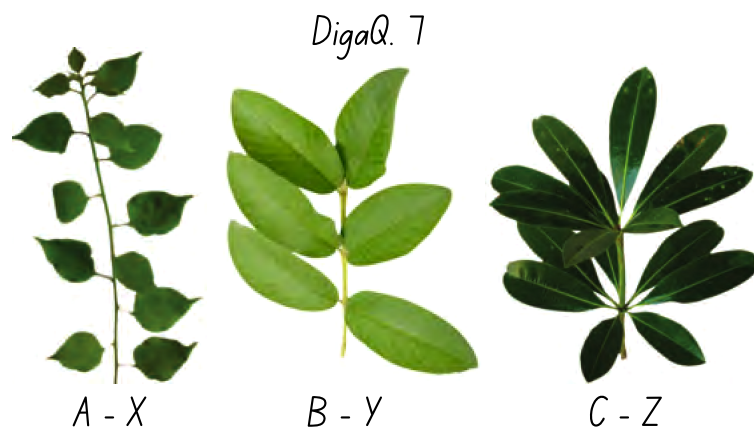
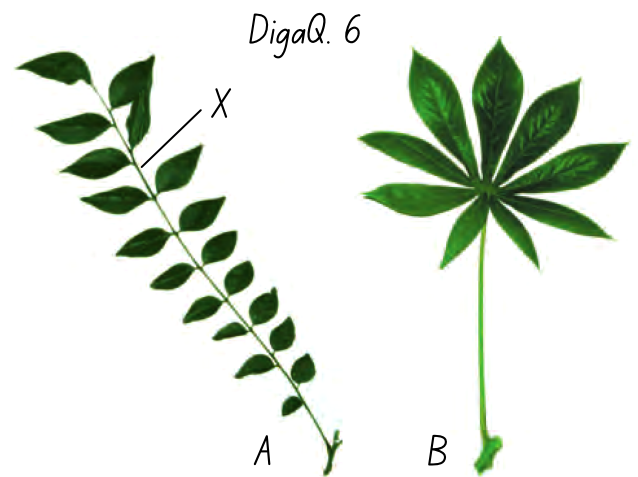
50. Leaf tendrils ex - (1)

51. Leaf spine ex - (1)

52. Leaves store food ex - (2)

53. In _____, leaves are small and short lived.

54. In it, petiole expand, become _____, synthesis food and called _____



• THE INFLORESCENCE

55. When a shoot tip transforms into a flower, it is always solitary. T/F

56. The arrangement of flower on floral axis is termed as _____

57. In racemose, flowers are arranged basipetally. T/F

58. Reproductive unit of angiosperms is _____

59. Pedicel 2 other names are -

60. Accessory whorls are -

61. In _____ the calyx and corolla are not distinct hence called _____

62. Actinomorphic means _____ symmetry.

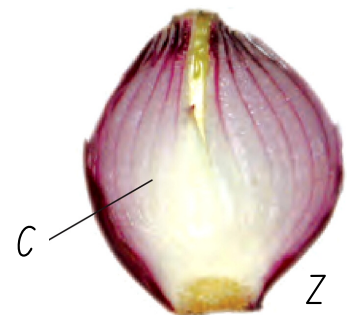
63. Bilateral symmetry means

64. Actinomorphic ex (3)

65. Zygomorphic ex (4)

66. Asymmetric ex (1)

67. What are bracts?



PARTH GOYAL

68. Ovaries are classified as hypo, epi and perigynous ovaries. T/F

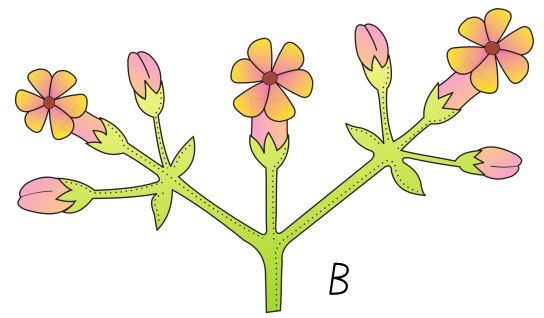
69. Flowers are classified as hypo, epi, perigynous on which basis?

70. Hypogynous flowers have inferior ovary. T/F

71. Hypogynous flower ex (3)

72. Perigynous ex (3) (NEET 2020)

73. Epigynous ex (3) (NEET 2020)



• PARTS OF FLOWER

74. Tell the Calyx types and how the both types look. (same is with corolla)

75. Corolla shapes (4)

76. Name the 4 types of aestivation.

77. Valvate ex (1) -

78. Imbricate ex (2) -

79. Twisted ex (2) -

80. Vexillary ex (2) -

81. Margins overlap each other but not in any particular direction -

82. Vexillary have many types of petals and their names?

83. _____ is also called papilionaceous.

84. Sterile stamen is called _____

85. When stamens are attached to petals, they are called _____. Ex - _____

86. Stamens attached to perianth called _____. Ex - _____

87. When each stamens remains free, it is called polyadelphous. T/F (NEET 2016)

88. Monadelphous meaning and ex -

89. Diadelphous ex -

90. Polyadelphous ex -

91. Variation in length of filament ex (2) - (NEET 2016)

92. Ovules are attached to a cushion like -

93. Apocarpous meaning and ex -

94. Syncarpous meaning and ex - (NEET 2016)

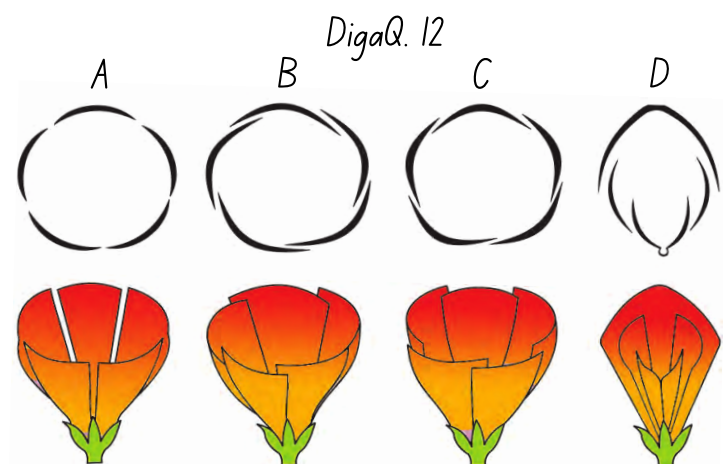
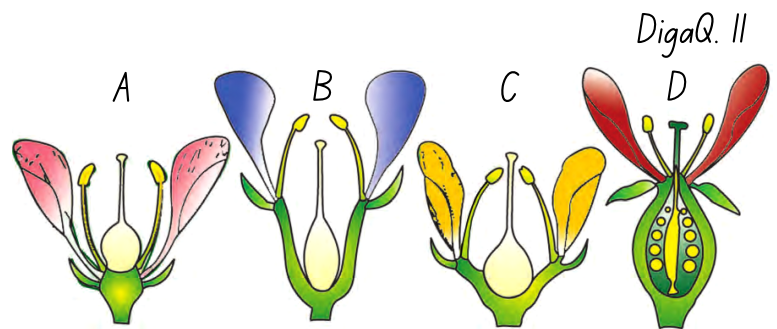
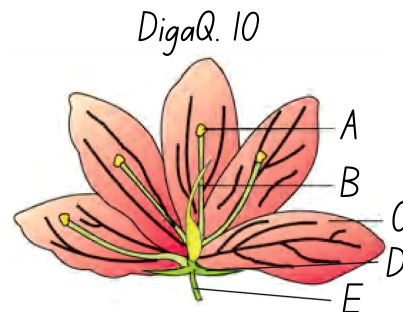
95. Name all the types of placentation.

96. Marginal ex -

97. Axile ex (3) -

98. Parietal ex (2) -

99. Free central (2) - (NEET 2016)



100. Basal ex (2) -

101. In marginal, placenta forms a ridge along the dorsal suture of the ovary. T/F

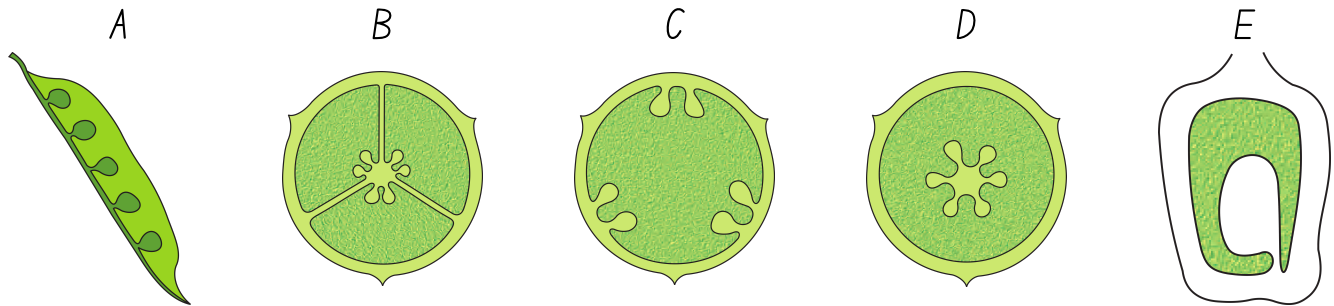
102. False septum is formed in _____ placentation.

103. Ovules are attached to a multilocular ovary when placenta is _____

104. Placenta develop at _____ of ovary in sunflower.

105. Usually more than one ovule is attached to the ovary in basal placentation. T/F

106. Septa are completely absent in _____



DigaQ. 13



• FRUIT, SEED AND SEED STRUCTURE

107. Fruit without fertilization called _____

108. Pericarp is differentiated into _____, _____, _____ only when it is _____ and _____

109. Drupe ex (2) (NEET 2017)

110. Drupe fruit develop from _____ superior/inferior ovaries.

111. Mesocarp is _____ in coconut.

112. Outermost covering of seed is called _____

113. No of layers in seed coat -

114. Outer _____ and inner _____

115. Developing seed is attached to the fruit through _____

116. Below hilum, is a small pore called micropyle. T/F

117. Endospermous seed ex (2) -

118. Non endospermous seed (2) ex -

119. In _____ such as _____, seed coat is fused with the fruit wall.

120. In maize, seed coat is membranous. T/F

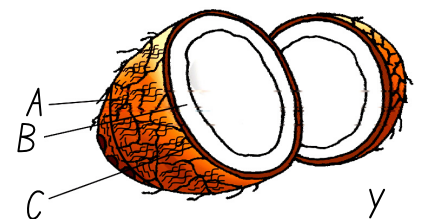
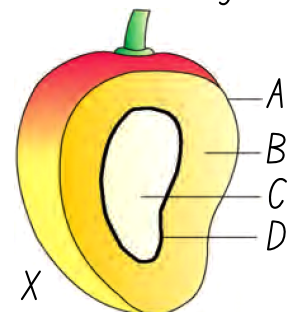
121. Endosperm and embryo are separated by _____

122. Aleurone layer is made of _____

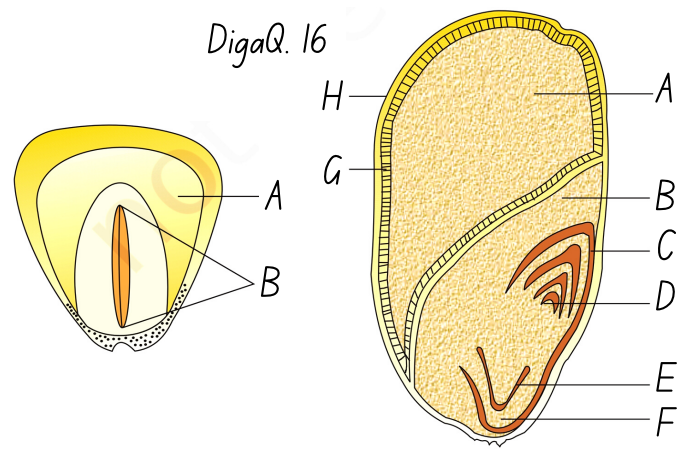
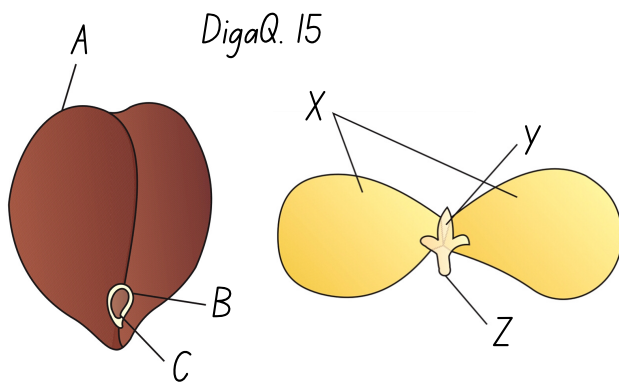
123. The cotyledon of monocot is called _____. It is _____ shaped. (NEET 2016)

124. Coleoptile enclose _____ and coleorhiza enclose _____

DigaQ. 14



PARTH GOYAL



• SOME IMPORTANT NCERT FAMILIES

• VEGETATIVE CHARACTERS (COMPARING NCERT FAMILIES)

125. Fabaceae was earlier known as _____, a subfamily of _____
126. _____ is commonly known as the potato family.
127. Only monocot family in NCERT is -
128. Root have _____ with nitrogen fixing bacteria _____ in Fabaceae.
129. Leaves of all the families given in NCERT are of _____ phyllotaxy.
130. Only family given in NCERT which is stipulate is _____
131. Leaf base is pulvinate in _____
132. Family of NCERT which may have pinnate leaves present are (2) -
133. Stem is erect or climber in _____
134. Hairy or glabrous stem is found in _____
135. Herbaceous, rarely woody aerial erect stem is found in _____
136. Simple, rarely pinnate leaves are found in _____
137. Palmate leaves are present in which family of NCERT?

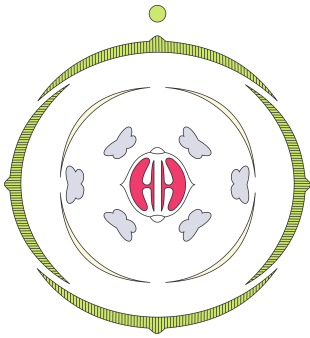
• FLORAL CHARACTER ECONOMIC IMP. (COMPARING FAMILIES)

138. The only family having racemose inflorescence is -
139. Only family having zygomorphic flower -
140. NCERT family which have unisexual flower is -
141. In Fabaceae, calyx and corolla aestivation is _____ and _____
142. In potato family, calyx and corolla aestivation is _____ and _____
143. Tepal in _____ have _____ aestivation.
144. Gamosepalous condition is in (2)
145. Androecium is attached to accessory whorls in (2) -



- Identify the family and write its floral formula

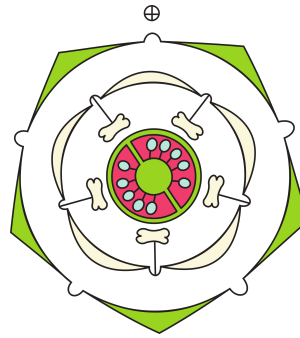
DigaQ. 17



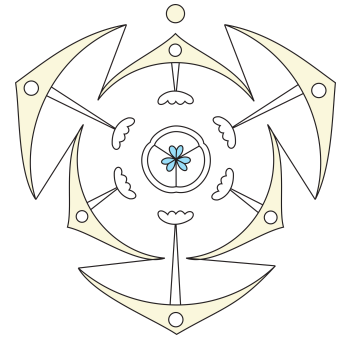
DigaQ. 18



DigaQ. 19



DigaQ. 20



146. Stamens no in Fab, Solan, Lili are respectively _____, _____, _____
147. Didelphous, anther dithecous is present in _____
148. NCERT family having inferior ovary is -
149. Carpels in Fab, Solan, Lili are respectively _____, _____, _____ (NEET 2016)
150. Locules in Fab, Solan, Lili are respectively _____, _____, _____
151. Syncarpous family (2)
152. Swollen placenta is present in _____
153. Axile placentation family (2)
154. Fruit of fabaceae is _____
155. Fruit of Solanaceae is _____
156. Fruit of Liliaceae is _____
157. Solanaceae have non endospermous seeds. T/F
158. Only family having non - endospermous seed is -
159. Medicines found in Fab, Solan, Lili respectively are -
160. Ornamental in Fab, Solan, Lili respectively are -
161. Pulses ex (5) -
162. Food in Solanaceae (3) -
163. Food in Liliaceae (2) -
164. Fodder ex (2) -
165. Edible oil ex (2) -
166. Dyes and Fibers found in Fabaceae are -
167. Spices of Solanaceae -
168. Tobacco comes from dried leaves of _____ found in family _____
169. _____ yield colchicine used in _____



MORPHOLOGY OF FLOWERING PLANTS



PARTH GOYAL



ANSWERS

• THE ROOT

1. Primary
2. Tap, fibrous, adventitious
3. Mustard
4. Monocots
5. Base of the stem
6. Wheat
7. Arise from part of plant other than radicle
8. Grass, Monstera and banyan tree
9. Absorption of water and minerals, providing a proper anchorage, storing reserve food material and synthesis of PGR
10. Root cap
11. F
12. T
13. Zone of elongation
14. Zone of maturation
15. Carrot, turnip, sweet potato
16. Prop root
17. Maize, sugarcane
18. T
19. Rhizophora, oxygen

• THE STEM

20. Plumule
21. potato, ginger, turmeric, zaminkand, Colocasia
22. T
23. Gourds (cucumber, pumpkins, watermelon) and grapevines
24. Citrus, Bougainvillea
25. Opuntia, Euphorbia
26. Prostrate branched with long internodes, spread to new niches when older parts die.
Ex - grass and strawberry
27. Strawberry and grass
28. Slender lateral branch arises from the base of the main axis and after growing aurally for sometime arch downwards to touch the ground

29. Mint and Jasmine
30. A lateral branch with short internodes and each node bearing a rosette of leaves and a tuft of roots
31. Pistia, Eichhornia
32. lateral branches originate from the basal and underground portion of stem, grow horizontally beneath the soil, then come out obliquely upward giving rise to leafy shoots
33. Banana, pineapple, Chrysanthemum
34. F, they are example of modified leaf

• THE LEAF

35. Node, bud
36. F
37. Leaf base, petiole and lamina
38. Leaf base, Stipules
39. monocots
40. Leguminous, Pulvinus
41. Petoile
42. Leaf blade
43. Simple
44. Bud is present in the axil of leaf but not leaflet
45. Pinnate - Neem, Palmate - Silk cotton
46. ALternate, Opposite, Whorled
47. Mustard, sunflower, china rose
(Mnemonic - MSC)
48. Guava, Calotropis
49. Alstonia, Nerium
50. Peas, sweet peas
51. Cactus
52. Onion, garlic
53. Australian Acacia
54. Green, phyllodes



• THE INFLORESCENCE

- 55. T
- 56. Inflorescence
- 57. F
- 58. Flower
- 59. Thalamus and receptacle
- 60. Calyx and corolla
- 61. Lily, Perianth
- 62. Radial
- 63. Zygomorphic
- 64. Mustard, datura, chilli
- 65. Pea, glumohur, bean, cassia
- 66. Canna
- 67. Reduced leaf found at the base of the pedicel
- 68. F
- 69. position of calyx, corolla and androecium in respect of the ovary
- 70. F
- 71. mustard, china rose and brinjal
- 72. plum, rose, peach
- 73. flowers of guava and cucumber, and the ray florets of sunflower

• PARTS OF FLOWER

- 74. Gamosepalous and polysepalous
- 75. Tubular, cell, funnel, wheel
- 76. Valvate, twisted, imbricate, vexillary
- 77. Calotropis
- 78. Cassia, gulmohur (Mnemonic - CaiGum)
- 79. China rose, lady finger, cotton (Mnemonic - CLC, CuLCuTaa - all capital letters denote ex and T denote twisted)
- 80. Pea and bean flowers
- 81. Imbricate, twisted has direction of overlapping
- 82. 3 - standard, wings, keel
- 83. Vexillary

- 84. Staminode
- 85. Epipetalous, brinjal
- 86. Epiphyllous, ex - lily
- 87. F, polyandrous
- 88. Stamens in one bundle, china rose
- 89. Pea
- 90. Citrus
- 91. Salvia and mustard
- 92. Placenta
- 93. Carpels are free ex - lotus and rose
- 94. Carpels are fused ex - Mustard and tomato
- 95. Marginal, axile, parietal, free central, basal
- 96. Pea
- 97. China rose, tomato, lemon
- 98. Mustard and Argemone
- 99. Dianthus and Primrose
- 100. Sunflower and marigold
- 101. F, ventral
- 102. Parietal
- 103. Axile
- 104. Base
- 105. F, only one single ovule in attached
- 106. Free central

• FRUIT, SEED & SEED STRUCTURE

- 107. Parthenocarpy
- 108. Epicarp, mesocarp and endocarp
- 109. Mango, coconut
- 110. Monocarpellary, superior
- 111. Fibrous
- 112. Seed coat
- 113. 2
- 114. Testa, tegmen
- 115. Hilum



PARTH GOYAL

- 116. F, above
- 117. Monocot, castor
- 118. Dicot, orchid
- 119. Cereals, maize
- 120. T
- 121. Aleurone layer
- 122. Protein
- 123. Scutellum, shield
- 124. Plumule, radicle

• SOME IMPORTANT FAMILIES

Vegetative characters Q.

- 125. Papilionoideae, leguminosae
- 126. Solanaceae
- 127. Liliaceae
- 128. Root nodules, Rhizobium
- 129. Alternate
- 130. Fabaceae
- 131. Fabaceae
- 132. Fab and Solan
- 133. Fabaceae
- 134. Solanaceae
- 135. Solanaceae
- 136. Solanaceae
- 137. None, both faba and solan have simple or pinnate and lili have basal simple linear

Floral character Economic Imp. Q.

- 138. Fabaceae
- 139. Fabaceae
- 140. None, all the bisexual
- 141. Valvate, vexillary
- 142. Valvate both
- 143. liliaceae, valvate
- 144. Fab and Solan
- 145. Solan (to petals) & Lili (to tepals)
- 146. 10, 5, 6(3+3)
- 147. Fabaceae

- 148. None, all are superior
- 149. 1, 2, 3
- 150. 1, 2, 3
- 151. Solan and Lili
- 152. Solanaceae
- 153. Solan and Lili
- 154. Legume
- 155. Berry or capsule
- 156. Capsule, rarely berry
- 157. F, it have endospermous seeds
- 158. Fabaceae
- 159. Fab - Muliathi, Solan - Belladonna, Ashwagandha, Lili - Aloe
- 160. Fab - Lupin, sweet pea Solan - Petunia, Lili - Gloriosa, tulip
- 161. Gram, arhar, sem, moong, soybean
- 162. Potato, tomato, brinjal
- 163. Asparagus, Allium cepa
- 164. Trifolium, Sesbania
- 165. Soyabean, groundnut
- 166. Indigofera, sunhemp
- 167. Chilli
- 168. Nicotiana tabacum, solanaceae
- 169. Colchicum autumnale, doubling of chromosomes
Liliaceae example mnemonic - GATAC - Gloriosa, aloe, tulip, asparagus, colchicine

• DigaQs

DigaQ. 1 - Different types of roots

- | | |
|------------------|---------------|
| A - Tap | X - Main root |
| B - Fibrous | Y - Laterals |
| C - Adventitious | |



PARTH GOYAL

DigaQ. 2 - The regions of the root-tip

A - region of maturation

B - region of elongation

C - region of meristematic activity

D - root cap

E - root hair

DigaQ. 3 - Modifications of root

A - Asparagus

B - Pneumatophore in Rhizophora

DigaQ. 4

A - storage W - Zaminkand

B - support X - Axillary bud modified into tendrils

C - protection Y - Stem modified into spine

D - spread Z - Roots arising from nodes

DigaQ. 5 - Parts of a leaf

A - Lamina

B - Stipule

C - Petiole

D - Leaf base

E - Axillary bud

DigaQ. 6 - Compound leaves

A - pinnately compound leaf X - Rachis

B - palmately compound leaf

DigaQ. 7 - Different types of phyllotaxy

A - Alternate X - China rose

B - Opposite Y - Guava

C - Whorled Z - Alstonia

DigaQ. 8 - Modifications of leaf

A - support: tendrils X - Pea

B - protection: spines Y - Cactus

C - storage: fleshy leaves Z - Onion

DigaQ. 9

A - Racemose inflorescence

B - Cymose inflorescence

DigaQ. 10 - Position of floral parts on thalamus

A - Hypogynous

B - Perigynous

C - Epigynous

D - Epigynous

DigaQ. 11

A - Androecium

B - Gynoecium

C - Corolla

D - Calyx

E - Pedicel

DigaQ. 12 - Types of aestivation in corolla

A - Valvate

B - Twisted

C - Imbricate

D - vexillary

DigaQ. 13 - Types of placentation

A - Marginal

B - Axile

C - Parietal

D - Free central

E - Basal

DigaQ. 14 - Parts of a fruit

X - Mango Y - Coconut

A - Epicarp A - Mesocarp

B - Mesocarp B - Seed

C - Seed C - Endocarp

D - Endocarp

DigaQ. 15 - Structure of dicotyledonous seed

A - Seed coat X - Cotyledon

B - Hilum Y - Plumule

C - Micropyle Z - Radicle



PARTH GOYAL

DigaQ. 16 - Structure of a monocotyledonous seed

A - Endosperm

B - Embryo

A - Endosperm

B - Scutellum

C - Coleoptile

D - Plumule

E - Radicle

F - Coleorhiza

H - Seed coat &
fruit-wall

G - Aleurone layer

DigaQ. 17

Brassicaceae - $\oplus \quad \text{♀} \quad K_{2+2} \quad C_4 \quad A_{2+4} \quad \underline{G}_{(2)}$

DigaQ. 18

Fabaceae - $\% \quad \text{♀} \quad K_{(5)} \quad C_{1+2+(2)} \quad A_{(9)+1} \quad \underline{G}_1$

DigaQ. 19

Solanaceae - $\oplus \quad \text{♀} \quad K_{(5)} \quad \widehat{C_{(5)}} \quad A_5 \quad \underline{G}_{(2)}$

DigaQ. 20

Liliaceae - Br $\oplus \quad \text{♀} \quad P_{(3+3)} \quad A_{3+3} \quad G_{(3)}$



SCAN AND DONATE US SO THAT WE
CAN CREATE MORE SUCH QUALITY
CONTENT FOR YOU!

JUST ₹10-20 WILL BE APPRECIABLE! :)

FRIEND: TERE BIO MAI 360/360
KAISE AAYE ??



PARTH GOYAL